

TWO NEW SPECIES OF *HYALINOECIA* (POLYCHAETA, ONUPHIDAE) FROM DEEP ZONES OFF NEW CALEDONIA (SOUTHWEST PACIFIC OCEAN)

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ABSTRACT

Two new species belonging to onuphid genus *Hyalinoecia* were collected from bathyal and abyssal zones off New Caledonia in the southwest part of Pacific Ocean. *Hyalinoecia abranchiata* n. sp. is characterized by the lack of branchiae, a character seldom seen in the genus, and with a brown elongated ring on each posterior lateral antennae. *H. bathyalis* n. sp. with ovoid frontal palps, bifid acicular setae without hoods, branchiae from setigers 21–28 chiefly differs from *H. tubicola longibranchiata* McIntosh, 1885 in the lack of dark pigment spots, and from *H. tubicola* (Müller, 1788) and *H. artifex* Verrill, 1880 in the shape of the acicular setae. Morphological differences and geographic and bathymetric distributions are shown by a comparison between the eight other known species of *Hyalinoecia* around the world and these two new species.

This paper describes two new species of *Hyalinoecia* from the southwest part of Pacific Ocean around the New Caledonia. As accepted here, the genus *Hyalinoecia* Malmgren, 1867 corresponds to the definition given by Paxton (1986) distinguishing it from the genus *Aponuphis* Kucheruk, 1918 by the number of anterior modified parapodia.

Specimens come from offshore samplings taken during the “BIOCAL” and “BIOGEOCAL” surveys in 1985 and 1987 (*Biology and Geology of New Caledonia*) conducted by the “Programme Interdisciplinaire de Recherche Scientifique” (Muséum national d’Histoire naturelle et Centre National de Recherche Scientifique) in depths between 245 m and 3,680 m off New Caledonia. The material was received from the Centre national de Tri d’Océanographie Biologique, Brest, France. The holotype and paratypes are deposited in the Museum national d’Histoire naturelle, Paris (MNHN). Some specimens are kept in the Laboratoire maritime, Dinard (JPL-MNHND). The material was collected with a dredge, fixed in formalin (10%) and transferred to 70% ethyl alcohol. Observations were made with a stereomicroscope under low power magnification (maximum 40×).

Family ONUPHIDAE Kinberg, 1865

Hyalinoecia Malmgren, 1867

Hyalinoecia abranchiata, new species

Figure 1 (A–F)

Material Examined.—All material is from abyssal zones off New Caledonia. BIOCAL Sta CP 26, 22°39’S, 166°27’E, 1,618 m–1,740 m, 28 August 1985, 15 specimens (JPL-MNHND); BIOCAL DW 79, 20°39’S, 166°51’E, 1,320 m–1,380 m, 5 September 1985, 1 specimen (JPL-MNHND); BIOGEOCAL Sta CP 214, 22°44’S, 166°28’E, 1,590 m–1,665 m, 9 April 1987, 2 specimens and several empty tubes (JPL-MNHND); BIOGEOCAL Sta CP 238, 21°27’S, 166°23’E, 1,260 m–1,300 m, 13 April 1987, 11 specimens (Paratypes MNHN UD 745); BIOGEOCAL Sta. CP 272, 21°00’S, 166°56’E, 1,615 m–1,710 m, 20 April 1987 (Holotype MNHN UD 744 + 7 specimens JPL-MNHND); BIOGEOCAL Sta DW 296, 20°38’S, 167°10’E, 1,230 m–1,270 m, 28 April 1987, 2 specimens (JPL-MNHND).

Type Locality.—Southwest Pacific, off New Caledonia, 1,615 m–1,710 m, no data about the substrate.

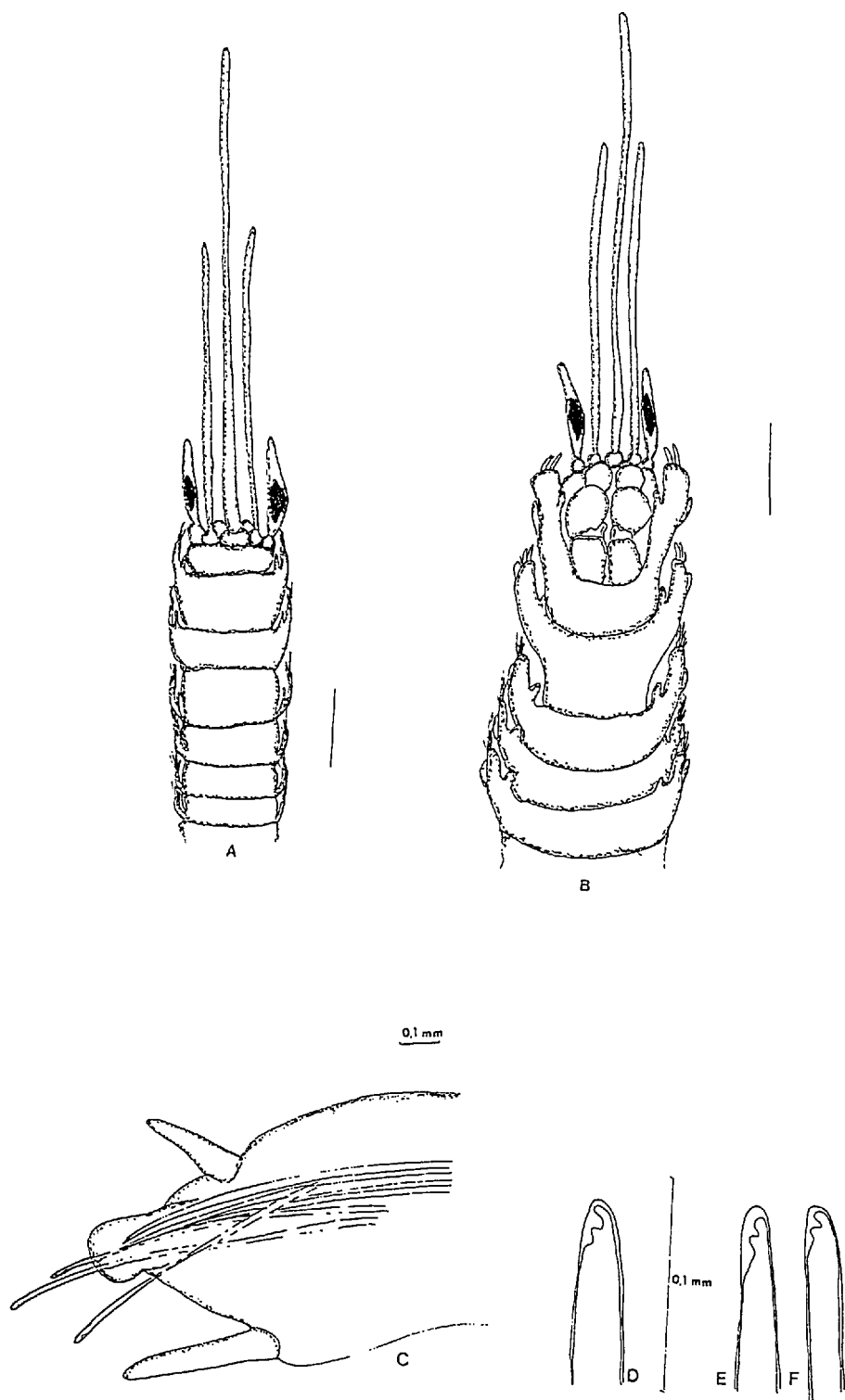


Figure 1. *Hyalinoecia abranchiata* n. sp., specimen from station CP 272: A, Anterior end dorsal view; B, Anterior end ventral view. A, B: scales = 1.0 mm. *Hyalinoecia abranchiata* n. sp., specimen from station CP 238: C, Parapodium of setiger 1, anterior view; D-E-F: Acicular setae from setiger 1. C, D, E, F: scales = 0.1 mm.

Diagnosis.—An abrianchiate *Hyalinoecia* with globose frontal palps, with brown elongated ring at mid-length of anterior lateral antennae; acicular setae hooded, bifid, with teeth far apart.

Description.—Most specimens incomplete or in several pieces. Single complete specimen with 66 setigers, 20 mm long and 1.5 mm wide. Holotype, incomplete specimen, 24 mm long and 1.0 mm wide with 58 setigers. Mean length of 39 specimens: 29.5 mm (from 13 mm to 46 mm) and mean number of setigers: 54 (from 20 to 88).

Most preserved specimens pale, but those from Sta CP 26 brownish; all specimens with a brownish elongated ring in middle of anterior lateral antennae (Fig. 1A).

Prostomium rounded and bearing a pair of globose frontal palps. Five occipital antennae, lateral antennae clavate, others elongate. Median occipital antenna, in most specimens, reaching setiger 11 when bent backward. Ceratophores with an single basal ring. No eyes. Ventrally, two large globose palps in front of mouth. White edges of mandibles project from the mouth (Fig. 1B). Mandibles with a widening basis of cutting plate. Mx I, falcate, Mx II with 10(11)–12(13) teeth, Mx III with 10–11 teeth, Mx IV with 4–5 teeth and Mx V with 1 tooth.

Peristomial ring short, achaetous lacking tentacular cirri. Setiger 1 with long parapodia oriented anteriorly and surrounding peristomium. Presetal lobes truncate (Fig. 1C), postsetal lobes clavate to subspherical and shorter than ventral cirrus. Setigers 1–3 with subulate ventral cirri, replaced from setiger 4 by ventral glandular ridges, these glandular ridges white in setigers 7 to 18. Dorsal cirri cirriform in anterior parapodia, absent in posterior segments. No branchiae seen.

Setiger 1 with 3–4 stout, hooded bidentate acicular setae with rounded distal tooth and smaller proximal tooth, the two teeth diverging (Fig. 1D–F). Setiger 2 with few limbate setae, a bundle of comb pectinate setae and 3 bidentate acicular setae like those in setiger 1. From setiger 3, only pectinate setae, and limbate setae. Two hooded acicular hooks present from setiger 14–23.

Posterior region flattened and badly preserved in most specimens.

Largest tube 60 mm long and 1.2 mm wide. Mean length: 43.5 mm (from 27 mm to 60 mm). Tubes transparent, smooth, recurved, with 2–3 flap valves.

Etymology.—*abbranchiata*, for the lack of branchiae.

Remarks.—In spite of the similarity with *H. juvenalis* Moore, 1911 (Fauchald, 1968; Lana, 1991), especially in the shape of the frontal palps and the spots on the lateral antennae, these forms, by lacking branchiae, are clearly distinguished from other described species from the Pacific area.

Hyalinoecia bathyalis, new species

Figure 2 (A–F)

Material Examined.—All material is from off New Caledonia, Southwest Pacific. BIOCAL Sta DW 65, 24°47'S, 168°09'E, 245 m–275 m, 3 Sept. 1985, 3 specimens (JPL-MNHND); BIOCAL Sta DW 77, 22°15'S, 167°15'E, 440 m, 5 Sept. 1985, (7 Paratypes MNHNP UD 748 + 5 specimens JPL-MNHND); BIOGEOCAL Sta DW 308, 20°40'S, 166°58'E, 590 m, 1 May 1987 (Holotype MNHNP UD 746 + 3 Paratypes MNHNP UD 747 + 4 specimens JPL-MNHND).

Type Locality.—Southwest Pacific off New Caledonia, 590 m, substrate unknown.

Diagnosis.—A branchiate *Hyalinoecia* with ovoid frontal palps, unidentate to bidentate acicular setae without hoods; and branchiae present from setiger 21–28 as a single filament.

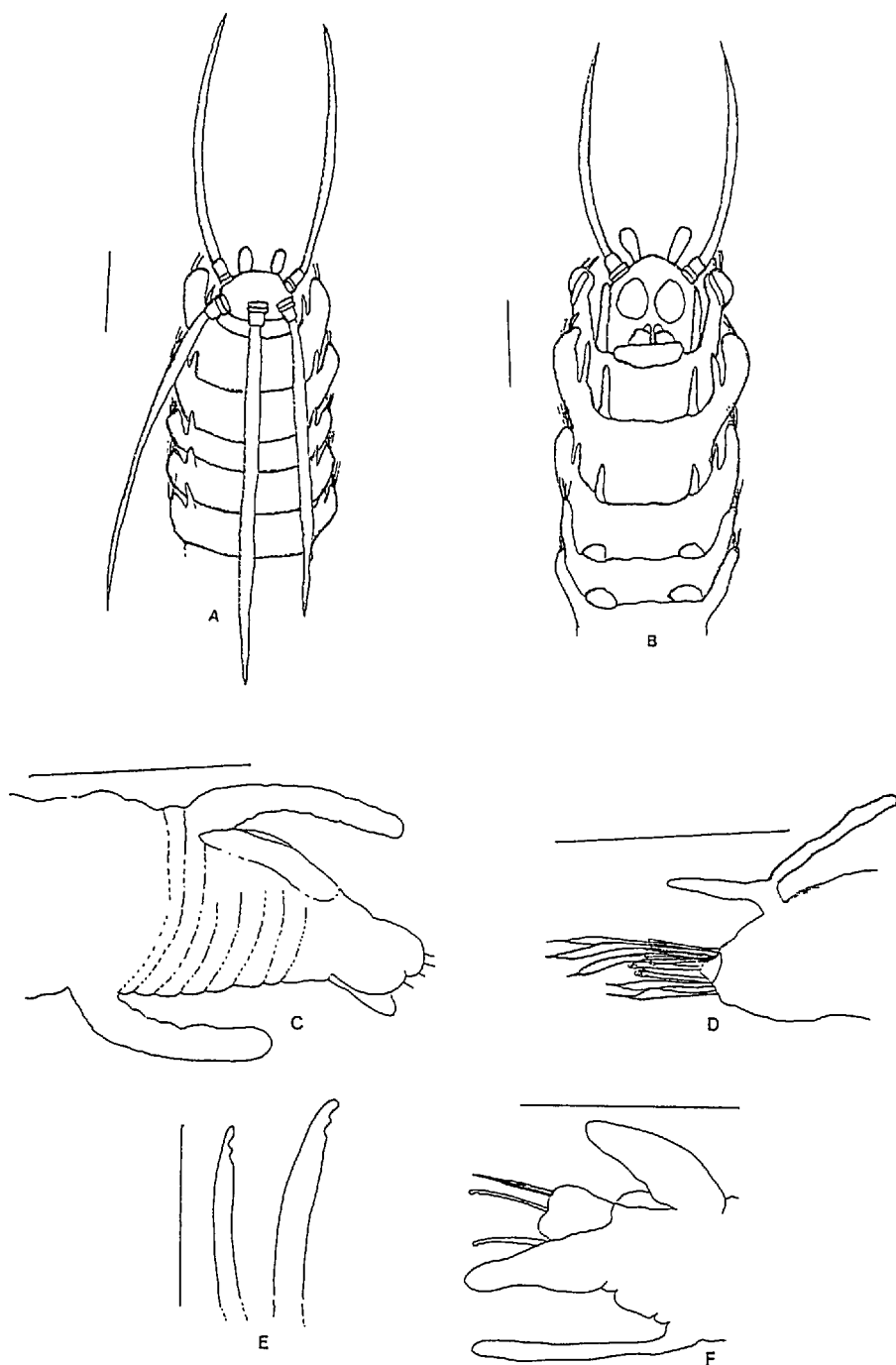


Figure 2. *Hyalinoecia bathyalis* n.sp., specimen from station DW 77: A, Dorsal view of anterior end; B, Ventral view of anterior end. A, B: scales = 1.0 mm. C, Parapodium from setiger 1, anterior view. D, Parapodium from setiger 25, dorsal view; E, Acicular setae from setiger 1; F, Parapodium of setiger 2, dorsal view. C-F: scales = 0.1 mm.

Description.—Most specimens incomplete with 20–87 setigers, the smallest from station DW 77, the biggest from station 308. Most of preserved specimens pale. A single female from station DW 65 with oocytes (diameter 200 μ m).

The holotype from station DW 308 is an incomplete specimen measuring 74 mm in length and 2 mm in width with 80 setigers.

Prostomium rounded, with pair of ovoid frontal palps and five, elongate occipital antennae. No eyes. Medium occipital antenna reaching setiger 12 to 20. Ceratophores with 3 rings, distal the longest. No eyes (Fig. 2A, B).

Peristomium short, achaetous, lacking tentacular cirri. Setiger 1 with long parapodia oriented anteriorly and surrounding peristomium.

Presetal lobes truncate, postsetal lobes elongated longer ventral cirrus (Fig. 2C). Setigers 1–3 with subulate ventral cirri, from setiger 4 only ventral glandular ridges. Dorsal cirri cirriform.

A single branchial filament first present from setiger 21–28 (Fig. 2D) Branchiae begin on setiger 21 among specimens from station DW 65, at a depth of 250 m, on setigers 25/26 among specimens from station DW 77 at a depth of 440 m, and on setigers 27/28 among specimens from station DW 308 at a depth of 550 m.

Setiger 1 with 2–3 distally bifid acicular setae without hoods, appearing almost unidentate, the proximal tooth very weakly developed, resembling a little bump (Fig. 2E). Setiger 2 (Fig. 2F) with same kind of acicular setae accompanied by few limbate and pectinate setae. Setiger 3 with limbate and pectinate setae (14/15 teeth).

Two hooded bidentate acicular hooks are present from 19/20th setiger.

Mandibles with long shafts widening into cutting plates, Mx I falcate, Mx II with 12 teeth, left Mx III with 12 teeth, right Mx III with 12 teeth, left Mx IV with 10 teeth, right Mx IV with 9 teeth, Mx V with a minute tooth.

Posterior region with two long pygidial cirri.

Tube transparent, with three flap-valves at one end, one flap at the other. Length of tubes between 28 mm (station DW 77) to 112 mm (station DW 308), with a diameter from 1 mm to 3 mm.

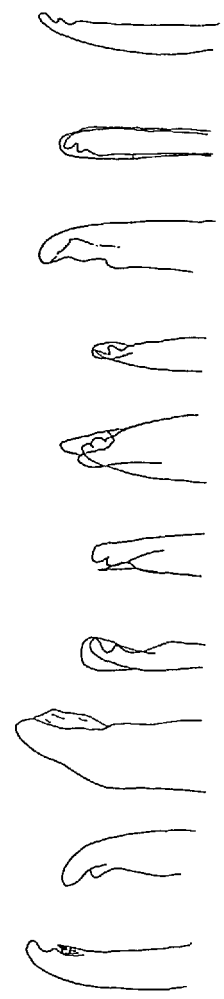
Etymology.—*bathyalis*, referring to the depth at which the specimens were collected.

Remarks.—*H. bathyalis* is very close to *H. tubicola longibranchiata* McIntosh, 1885 (Orensanz, 1990); *H. tubicola* (Müller, 1788) (Mangum and Rhodes, 1970), *H. artifex* Verrill, 1880 and *H. incubans* (Orensanz, 1990) but differs in lacking eyes and in the shape of the first acicular setae (Table 1). *H. bathyalis* can be identified from its various morphological aspects as a distinct form from previously described species.

DISCUSSION

The morphological characteristics of these two new forms clearly distinguish them from most of the accepted described species of *Hyalinoecia*. If species with first acicular setae unidentate (*H. artifex* Verrill, 1880; *H. incubans* Orensanz, 1990; *H. tubicola*; *H. tubicola longibranchiata*; and *H. bathyalis* n. sp.) and ones with acicular setae distinctly bidentate (*H. juvenalis* Moore, 1911; *H. stricta* Moore, 1911; *H. robusta* Southward, 1977; *H. araucana* Carrasco, 1983; and *H. abbranchiata* n. sp.) are compared (Table 1), there does not appear to be any relation between depth or geographical distribution and this character, nor does setiger where the first branchiae appear seem either to be linked with the bathymetric range.

Table 1. Comparison of the main characteristics of all known species of *Hyalinoecia*

SPECIES	Table 1									
	<i>H. tubicola</i>	<i>H. tubicola</i>	<i>H. artifex</i>	<i>H. juvenalis</i>	<i>H. stricta</i>	<i>H. robusta</i>	<i>H. araucana</i>	<i>H. incubans</i>	<i>H. abbranchiata</i>	<i>H. bathyclis</i>
character :	(Vahl, 1788)	(M. Lachn, 1885)	Ventil, 1889	Moore, 1911	Moore, 1911	Southward, 1977	Cernusco, 1983	Cernusco, 1990	new species	new species
Length (specimen) Max.	35-130 mm	No data	180 mm	No data	No data	> 80 mm	48 mm	36 mm	43 mm	incomplete
Length (type)	No data	No data	No data	< 100 mm	> 300 mm	100 mm	-----	60 mm	43 mm	28-112 mm
Frontal tube (shape)	Clavate	Ovoid	Rounded-Pyiform	Elongated form	Clavate form	Globose form	Globose form	ovoid	Globose form	Elongated form
Lateral antennae (eyes)	No data	No data	No data	Short clavate with longitudinal dark line	Elongated without dark spots	Elongated without dark spots	No data	No data	Elongated with dark spot	Elongated styles without dark spot
Eyespots	Black; eyespots	Yes very small	No (juveniles ?)	No (?)	No (?)	No	No	Minute eyespots	No	No
First anterior setae	Bifid; teeth well separated, apical, weak hooded	Bifid	Unidentate; smooth Bifid teeth weak remote	Bifid teeth close	Bifid teeth close	Bifid teeth	Bifid, Hooded	Weakly bifid	Bifid; teeth far apart Bifid, hooded	Bifid; teeth close
		No hoods	No hoods	Hooded	Short hood	very close		No hoods		No hoods
										
Breadth of 1st branch from setifer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NO	Yes
Collecting depth	22-26	25-28	24-33	17-20	26-30	18-22	18-21	22-23		21-28
Setal type	250-300µm	135-970µm	350-1500µm	50 to 300µm	> 800-900µm	1500-3000µm	600µm	128-146 µm	1615-1710µm	245-600µm
Geographic area	heterogeneous Norway, Sweden North Sea Mediterranean Sea (?)	New Zealand	South Atlantic (Scott Sea) Subantarctic	muddy fine sand Southern California Bay of Biscaya Panama West Indies Brazil-Argentina	No data	muddy fine sand	No data	No data	No data	No data
References and remarks	Margen & Rhodes, 1970, p. 5	(after Orensanz, 1990 p. 51)	(after Orensanz, 1990 p. 57)	(after Fausch, 1968 p. 61)	(after Fausch, 1968 p. 61)	(after Southward, 1977 p. 186)	(after Orensanz, 1983 p. 131)	(after Orensanz, 1990 p. 131)		
	1970	Orensanz, 1990	Southward, 1977	Fausch, 1968	Fausch, 1968	Southward, 1977	Cernusco, 1983	Orensanz, 1990	This paper	This paper
						= <i>H. pleurobranchialis</i> Grobe, 1877 ?				

In spite of these observations, all these species show specific characteristics distinguishing them from one other and each has its own biogeographic and bathymetric environmental conditions.

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